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EXAMINER

HAND, MELANIE JO

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/747,923	Applicant(s) LINDSAY ET AL.	
	Examiner MELANIE J. HAND	Art Unit 3761	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-5,7-16 and 20-68 is/are pending in the application.
- 4a) Of the above claim(s) 52-68 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-5,7-16 and 20-51 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. In response to applicant's remarks regarding the Notices of Non-Compliant Amendment, upon further review of the claims and the specification, the amendment is found to be compliant and the claims as currently amended are examined on the merits herein.
2. In response to applicant's remarks on page 10 regarding claim 45, the objection to claim 45 is withdrawn in view of the amendment to the claims.
3. Applicant's arguments with respect to the rejections of claims 1, 3-5, 7-16 and 20-51 over Fearing, alone or in combination with other references, have been considered but are moot in view of the new ground(s) of rejection prompted by applicant's amendment to the claims.

Specification

4. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: there is no antecedent basis for "a protrusion". The only place that this term is found in the disclosure is in reference to a prior art reference in the section titled "Cleaning Articles" and thus cannot provide antecedent basis for "a protrusion" as recited in the claims of the instant application.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Kacher et al (U.S. Patent Application Publication No. 2003/0044569).

With respect to **claim 1**: Kacher discloses a disposable absorbent article in the form of a cleaning sheet having a nonwoven substrate made of natural cellulosic material, i.e. absorbent material (¶ 0046), comprising a nanofabricated attachment means comprising adhesive hairs in the form of slanted fiber protrusions having adhesive coated thereon (¶¶ 0054,0116) disposed on a flexible substrate wherein said hairs are effective to adhesively engage an opposing surface comprising a polymeric film or a fibrous web such as carpet, wherein the attachment means has a packing density of about 1 to about 1,000 per square centimeter (¶ 0063), i.e. 100 - 10⁵ hairs per square millimeter, which overlaps the claimed range of at least 500 hairs per square millimeter, wherein the hairs do not consist of a spatula or protrusion positioned at a terminal end of the hairs as can be seen in Fig. 8.

7. Claim 1 is rejected under 35 U.S.C. 102(a) as being anticipated by Kacher et al ('569).

With respect to **claim 1**: Kacher discloses a disposable absorbent article in the form of a cleaning sheet having a nonwoven substrate made of natural cellulosic material, i.e. absorbent material (¶0046), comprising a nanofabricated attachment means comprising adhesive hairs in the form of slanted fiber protrusions having adhesive coated thereon (¶¶0054,0116) disposed on a flexible substrate wherein said hairs are effective to adhesively engage an opposing surface comprising a polymeric film or a fibrous web such as a carpet, wherein the attachment means has a packing density of about 1 to about 1,000 per square centimeter (¶0063), i.e. 100 - 10⁵ hairs per square millimeter, which overlaps the claimed range of at least 500 hairs per square millimeter, wherein the hairs do not consist of a spatula or protrusion positioned at a terminal end of the hairs as can be seen in Fig. 8.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any

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evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kacher et al ('569).

With respect to **claim 4**: The hairs disclosed by Kacher are effective to adhesively engage an opposing surface comprising a polymeric film or fibrous web, specifically loop material on a mop head, with an average adhesive force of at most 405 mN/hair, which overlaps the claimed range of at least 10 nanoNewtons or greater per hair. Examiner's position is based upon the following:

1) Kacher's disclosure of an attachment force of at least 600 g (5.88 N), 2) Kacher's disclosure of a 1.5 " square sample of hair/hook fastener material to determine glide resistance, and 3) the packing density disclosed by Kacher of 1-1,000 hairs/cm². The attachment force per hair would therefore be calculated as $(5.88 \text{ N}) / (14.5 \text{ cm}^2) * (1^2 \text{ cm}^2) / (1-1,000 \text{ hairs})$, i.e. at most $4.05 * 10^{-4}$ N/hair, or 405 mN/hair.

Kacher discloses a sample area for determining glide resistance and attachment force for the same cleaning sheet. Thus, any unit of area of the cleaning sheet will have a glide resistance per unit area as disclosed by Kacher and the associated attachment force over the same sample area. The glide resistance disclosed is based on a 1.5" square area ($=14.5 \text{ cm}^2$), and so therefore would be the associated attachment force disclosed by Kacher. Thus, while Kacher does not explicitly disclose a sample area or total area for the cleaning sheet upon which the attachment force value is based and thus does not explicitly disclose attachment force per hair, it would be obvious to one of ordinary skill in the art to modify the attachment force

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such that the force per area for an area equal to the glide resistance sample area is at most 405 mN/hair with a reasonable expectation of success.

11. Claims 3, 5, 7-16, 25-30, 33-46 and 49-51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kacher et al ('569) in view of Geim (see PTO-892 form for full citation).

With respect to **claim 3**: Kacher does not disclose a diameter for the fibers. Geim discloses a gecko-like attachment means comprising adhesive hairs having an average diameter of 0.2 – 4 microns, which overlaps the claimed range. Since the article of Geim seeks to solve a similar problem to that with which applicant is concerned, it would be obvious to one of ordinary skill in the art to modify the article of Kacher such that the average diameter of the prongs is 0.2 – 4 microns with a reasonable expectation of success to provide an article with an equally effective or improved adhesive capability with respect to other surfaces.

Further, Kacher does not disclose an average height-to-diameter ratio of about 3 or greater. However, upon modification of the article of Kacher such that the hairs have a diameter as disclosed by Geim with the height kept constant at the value disclosed by Kacher, the average height to diameter ratio is about 3 or greater. The motivation to modify the article of Kacher such that the hairs have a diameter as disclosed by Geim is stated *supra* in the rejection of this claim.

With respect to **claim 5**: Kacher discloses a disposable absorbent article in the form of a cleaning sheet having a nonwoven substrate made of natural cellulosic material, i.e. absorbent material (§0046) comprising an adhesive fastener including a flexible substrate 34, a plurality of adhesive hairs in the form of slanted fiber protrusions having adhesive coated thereon

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(¶¶0054,0116) rising from said substrate, said adhesive hairs each having a base section delineated by the base of the hair and height 78 in Fig. 7, a midsection delineated by height 78 and height 79, a top section extending above height 79, and a height of 0.5 – 80 mm (¶0074), which overlaps the claimed range of about 0.5 microns to about 8 millimeters. The hairs do not consist of a spatula or protrusion positioned at a terminal end of the top section as can be seen in either of Figs. 8 or 10.

Kacher does not disclose a diameter for said hairs within the claimed range of about 0.05 microns to about 50 microns. Geim discloses a gecko-like attachment means comprising adhesive hairs having an average diameter of 0.2 – 4 microns, which overlaps the claimed range. (Geim, page 2, ¶4) Since the article of Geim seeks to solve a similar problem to that with which applicant is concerned it would be obvious to one of ordinary skill in the art to modify the article of Kacher such that the average diameter of the prongs is 0.2 – 4 microns with a reasonable expectation of success to provide an article with an equally effective or improved adhesive capability with respect to other surfaces.

With regard to the limitation “gecko-like adhesive fastener”, the following is cited from applicant’s specification: “the term “gecko-like adhesive” refers to an adhesive material comprising minute hairs rising from a substrate capable of conforming to and adhering to an opposing surface.” (Specification, page 5, lines 20-23) The article of Kacher as modified by Geim meets the limitation of an adhesive material comprising minute hairs rising from a substrate capable of conforming to and adhering an opposing surface, e.g. a mop head surface (¶0148), inasmuch as the article of Kacher as modified by Geim meets the recited limitations regarding hair diameter of about 50 microns or less.

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With respect to **claim 7**: The hairs disclosed by Kacher have a height of about 500 to 80×10^3 microns, which overlaps the claimed range of 2 microns to about 1000 microns. (¶0074)

With respect to **claim 8**: Kacher does not disclose a diameter for said hairs. Geim discloses a gecko-like attachment means comprising adhesive hairs having an average diameter of 0.2 – 4 microns, which overlaps the claimed range. The motivation to modify the article of Kacher such that the hair diameter has a range disclosed by Geim is stated *supra* with respect to claim 5.

With respect to **claim 9**: The hairs disclosed by Kacher are spaced apart by a first distance of at least 0.15 mm (150 microns) which overlaps the claimed range of about 1 micron to about 1000 microns. ¶0063)

With respect to **claim 10**: The hairs are spaced apart by a second distance, equal to the first, of at least 0.15 mm (150 microns) which overlaps the claimed range of about 1 micron to about 1000 microns. ¶0063)

With respect to **claim 11**: Kacher discloses a first distance of at least 0.15 mm, but does not disclose a diameter for said hairs. Geim discloses a diameter of 0.2 – 4 microns. Therefore, in the article of Kacher as modified by Geim to have the hair diameter disclosed by Geim, the ratio of first distance to hair diameter is $(150/0.2) - (150/4)$, or at least about 37.5 to about 750 which overlaps the claimed range. The motivation to modify the article of Kacher such that the hair diameter has a range disclosed by Geim is stated *supra* with respect to claim 5.

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With respect to **claim 12**: Kacher discloses a second distance of at least 0.15 mm, but does not disclose a diameter for said hairs. Geim discloses a diameter of 0.2-4 microns. Therefore in the article of Kacher as modified by Geim to have the hair diameter disclosed by Geim, the ratio of second distance to hair diameter is $(150/0.2) - (150/4)$, or at least about 37.5 to about 750 which overlaps the claimed range. The motivation to modify the article of Kacher such that the hair diameter has a range disclosed by Geim is stated *supra* with respect to claim 5.

With respect to **claim 13**: In the article of Kacher as modified by Geim, the ratio of the height of said hairs (0.5 - 80 mm, or $500 - 80 \times 10^3$ microns (disclosed by Kacher)) to the diameter of said hairs (i.e. 0.2 - 4 microns (disclosed by Geim)) in article of Kacher as modified by Geim is $125 - 4 \times 10^5$, which overlaps the claimed range of about 2 to about 1000. The motivation to modify the article of Kacher such that the hair diameter has a range disclosed by Geim is stated *supra* with respect to claim 5.

With respect to **claim 14**: As can be seen in Fig. 8 of Kacher, at least one of said hairs is perpendicular to the plane of said substrate.

With respect to **claim 15**: As can be seen in Fig. 10 of Kacher, due to the prong top section, at least one of said hairs is oriented at an angle between 0° and 90° to the plane of said substrate.

With respect to **claim 16**: At least one of said hairs disclosed by Kacher in Fig. 10 is axisymmetric.

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With respect to **claim 25**: The substrate disclosed by Kacher is made of a nylon film, i.e. a web that is hydrophobic and liquid-impermeable by its nature. As applicant has not identified a particular liquid, for examination purposes examiner is interpreting the liquid as water or a bodily fluid. (¶0046)

With respect to **claims 26,27**: The thickness of said substrate disclosed by Kacher includes a polymeric net incorporated therein by embossment and thus necessarily comprises a repeating pattern of thickness variations. (¶0048)

With respect to **claim 28**: Kacher discloses a coating in the form of a surface additive material on at least one side of said substrate. (¶0137)

With respect to **claim 29**: The coating disclosed by Kacher is a "polyisobutylene polymer", which is by its nature hydrophobic. (¶0129)

With respect to **claim 30**: The coating disclosed by Kacher is a starch powder, which is hydrophilic. (¶0138)

With respect to **claim 33**: The substrate comprises regions, i.e those between rows of fastener material, that are made of substrate material which Kacher discloses includes a scrim made of a copolymer of polyethylene and polypropylene which is by its nature a thermoplastic elastomeric material. (¶0048)

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With respect to **claim 34**: The substrate disclosed by Kacher is substantially elastic because of the presence of the elastomeric scrim material, and homogeneous inasmuch as the scrim and substrate polymer material are present throughout the entire substrate layer. (¶0048) The term “substantially elastic” is only defined in exemplary terms in the specification, wherein the definition is insufficient to clearly and explicitly define the term. Thus the claim is given its broadest reasonable interpretation.

With respect to **claims 35,36**: The substrate of Kacher contains discrete elastic regions separated by less elastic regions wherein the less elastic regions are defined by those regions to which the rows of fastener material are attached inasmuch as the bonding points as well as the less elastic polyamide material of the fastener render those regions inelastic.

With respect to **claim 37**: The fastener of Kacher, made of nylon material, is stretchable inasmuch as nylon is a stretchable material. (¶0046)

With respect to **claim 38**: Kacher discloses that the fastener material may be made of thermoplastic material such as styrene-isoprene (SIS) block copolymer, which is by its nature an elastic material. Thus the fastener of Kacher comprises elastic regions. (¶0057)

With respect to **claim 39**: The attachment surface of said fastener disclosed by Kacher is elastic inasmuch as the protrusions/hairs are also made of SIS, which is elastic in nature. (¶0057)

With respect to **claim 40**: The fastener of Kacher includes protrusions that can be a combination of hooks and loops which are complimentary fastener elements and therefore the

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fastener is adapted for fastening said article to itself. (¶0054)

With respect to **claim 41**: The fastener is adapted for fastening said article to another object, namely a mop head. (Fig. 21)

With respect to **claim 42**: The fastener of Kacher is adapted is adapted for joining to itself and is thus necessarily also adapted for joining two or more components of said article, e.g. the two opposing ends of the article.

With respect to **claim 43**: Kacher discloses in Fig. 22 a cleaning mitt having said fastener on the outer surface. As can be seen in Fig. 22, the fastener material approaches the side seam. Kacher discloses adding fastener material such that the fastener as a whole comprised a side seam of the mitt would result in increased surface area for pickup of materials to be wiped or cleaned (¶0125) and discloses a similar hook-loop fastener at a side seam of the mitt (¶0158) for fastening around a user's hand for a snug fit, though it is not the fastener that meets the claim limitations. Therefore Kacher does not explicitly disclose that the attachment means extends up to or comprises the side seam. It would be obvious to one of ordinary skill in the art to modify the article of Kacher by adding additional fastener material rows on either side or both sides of those in the attachment means shown in Fig. 22 with a reasonable expectation of success to increase the pickup ability of the cleaning mitt. The article suggested by Kacher thus renders the limitation "wherein said fastener comprises part of a side seam of said article" obvious.

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With respect to **claim 44**: As can be seen in Fig. 6 of Kacher, said fastener comprises a three-dimensional topography characterized by a series of peaks and valleys.

With respect to **claim 45**: The peaks and valleys disclosed by Kacher alternate in a first direction. (Fig. 6)

With respect to **claim 46**: Groups of hairs are selectively disposed on a combination thereof, inasmuch as Kacher discloses that the substrate includes a scrim material held therein by embossing. Since Kacher is silent regarding specific placement of the hairs relative to the valleys formed by embossing and the fastener material appears to span almost the entire length of the article (see, e.g. Fig. 22), it is examiner's position that the groups of hairs are selectively disposed on a combination of peaks and valleys of the substrate.

With respect to **claim 49**: As can be seen in Fig. 6 of Kacher, said fastener comprises substantially hair free regions between groups of hair.

With respect to **claim 50**: The phrase "substantially uniformly" is not clearly and explicitly defined in the disclosure therefore the claim is given its broadest reasonable interpretation. The hairs disclosed by Kacher are distributed uniformly in the longitudinal direction of the article but form alternating peaks and valleys in a first lateral direction (Fig. 2), therefore the hairs are considered herein to be distributed substantially uniformly along the fastener.

With respect to **claim 51**: The phrase "substantially randomly" is not clearly and explicitly defined in the disclosure therefore the claim is given its broadest reasonable interpretation. The

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hairs form alternating peaks and valleys in the first lateral direction, therefore the hairs are considered herein to be distributed substantially randomly along the fastener.

12. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kacher et al ('569) in view of Geim as applied to claim 5 above, and further in view of Fearing et al (WO 03/095190 A1).

With respect to **claim 20**: Kacher does not disclose that at least one of said hairs is hollow.

Geim discloses hairs that are plastic pillars, which could be hollow or solid but does not disclose whether the hairs are hollow or solid. Fearing teaches that at least one of the hairs 10 is grown as organic carbon nanotubes, which are hollow. Thus, Fearing teaches that at least one of said hairs 10 is hollow. (Page 19, lines 9-12) Since Fearing seeks to solve a similar problem to that with which applicant is concerned and discloses that the attachment means has an adhesive force per hair that overlaps the claimed range set forth in claim 4, as do the hairs in Kacher, it would be obvious to one of ordinary skill in the art to modify the attachment means of Kacher such that at least one of the hairs is made from a hollow carbon nanotube with a reasonable expectation of success to provide an at least equally effective, if not improved, attachment means. The article of Kacher as modified by Geim and as further modified by Fearing thus renders claim 20 unpatentable.

With respect to **claim 21**: Kacher does not disclose that at least one of said hairs is hollow.

Geim discloses hairs that are plastic pillars, which could be hollow or solid but does not disclose whether the hairs are hollow or solid. Fearing teaches that at least one of the hairs 10 is grown as organic carbon nanotubes, which are hollow. Thus, Fearing teaches that at least one of said

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hairs 10 comprises hollow materials (Page 19, lines 9-12) The motivation to modify the hairs of Kacher such that they are made of hollow carbon nanotubes as disclosed by Fearing is stated *supra* with respect to claim 20.

With respect to **claim 22**: Kacher does not disclose that the hairs comprise molecules with hollow chambers. Geim discloses hairs that are plastic pillars, which could be hollow or solid but does not disclose whether the hairs are hollow or solid. Fearing teaches that at least one of the hairs 10 is grown as organic carbon nanotubes, which are molecules with hollow chambers. (Page 19, lines 9-12) The motivation to modify the hairs of Kacher such that they are made of hollow carbon nanotubes as disclosed by Fearing is stated *supra* with respect to claim 20.

13. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kacher et al ('569) in view of Geim and further in view of Fearing ('109) as applied to claim 22 above and further in view of Borchardt (see attached PTO-892 form for full citation).

With respect to **claim 23**: Kacher discloses that the cleaning substrate has protrusions thereon (i.e. the hairs) are made of various materials, preferably polyamides (¶¶0046,0057), but does not disclose molecules for the hairs that are cyclodextrins, crown ethers, polyhedral oligomeric silsesquioxanes (hereafter "POSS"), or combinations thereof. Fearing also does not disclose any of these materials. Borchardt discloses teaches that POSS structures reinforce polyesters, polyamides and cellulosic polymers and increase the material's glass transition temperature to provide the structural strength of a nanotube while preserving the non-corrosive nature of the polymer thereon. Therefore, it would be obvious to one of ordinary skill in the art to modify the article of Kacher such that the hairs also comprise a POSS molecule having a hollow chamber

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to reinforce the polyamide material as taught by Borchardt to provide a material for the instant hairs that can endure multiple uses of the fastener having the hairs thereon and to prevent risk of corrosion. Thus, the article of Kacher as modified by Fearing and as further modified by Borchardt renders claim 23 unpatentable.

14. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kacher et al ('569) in view of Geim, as applied to claim 5 above, and further in view of Gruenbacher et al (U.S. Patent No. 6,276,386).

With respect to **claim 24**: Kacher does not disclose that the substrate is apertured.

Gruenbacher discloses a cleaning mitt comprising either a nonwoven substrate in the form of front panel 24 defining an outer scrubbing surface. Gruenbacher discloses that apertured nonwovens lend sufficient strength and texture for a scrubbing surface and add additional structural integrity to the surface. ('386, Col. 12, lines 23-34) Therefore it would be obvious to one of ordinary skill in the art to modify the article of Kacher such that the substrate is apertured as disclosed by Gruenbacher to provide additional cleaning capability in the form of a scrubbing surface and to add structural integrity to the substrate surface used for cleaning.

15. Claims 31 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kacher et al ('569) in view of Geim as applied to claims 5 and 27 above, and further in view of Moji et al (U.S. Patent No. 4,716,067).

With respect to **claim 31**: Kacher discloses antimicrobial and fungicidal coatings, some of which could be metal oxides (¶0139), but does not explicitly disclose that the coating is a metal oxide.

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Moji teaches that the substrate is comprised of titanium that is subsequently anodized, i.e. a titanium dioxide layer, which is a metal oxide layer, is created and thickened on at least one side of the substrate. Moji teaches that said substrate and integrated fastener has a high fastener load capability, therefore it would be obvious to one of ordinary skill in the art to modify the article of Kacher to provide a fastener with a high fastener load capability as taught by Moji to ensure that the article is secure during wear. ('067, Col. 3, lines 30-35, Col. 4, lines 9-16) The combined teaching of Fearing and Moji renders the limitation "wherein said coating is a metal oxide" obvious.

With respect to **claim 32**: Kacher does not disclose a metal oxide coating. Moji teaches that the substrate is comprised of titanium that is subsequently anodized, i.e. a titanium dioxide layer, which is a metal oxide layer, is created and thickened on at least one side of the substrate. The metal oxide is titanium dioxide treated with a primer in the form of a nitrile phenolic adhesive, which is capable of absorbing UV light. The resulting honeycomb substrate layer 15 taught by Moji having titanium dioxide coating treated with UV absorbing adhesive primer is then baked at 200 °F, i.e. the substrate 15 having metal oxide coating treated with UV-absorbing material is thermally treated. Moji teaches that said substrate and integrated fastener as fabricated according to the instant invention has a high fastener load capability, therefore it would be obvious to one of ordinary skill in the art to modify the article of Kacher such that the surface additive coating is titanium dioxide treated with a UV absorbing material that is thermally treated to provide a fastener with a high fastener load capability as taught by Moji to ensure that the article is secure during wear. ('067, Col. 3, lines 30-35, Col. 4, lines 9-16)

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16. Claims 47 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kacher et al ('569) in view of Geim, as applied to claim 5 above, and further in view of Osborn, III et al (U.S. Patent No. 5,772,648).

With respect to **claims 47,48**: Kacher does not explicitly disclose that said hairs are protected from contamination with other materials until pressed into contact with an opposing surface. Osborn discloses that it is known to sometimes use a release liner with a mechanical fastener such as the hook and loop material disclosed by Kacher. ('648, Col. 15, lines 31-33) Thus, it would be obvious to one of ordinary skill in the art to modify the article of Kacher such that said hairs are protected from contamination with other materials until pressed into contact with an opposing surface by a release sheet or liner as disclosed by Osborn with a reasonable expectation of success.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MELANIE J. HAND whose telephone number is (571)272-6464. The examiner can normally be reached on Mon-Thurs 8:00-5:30, alternate Fridays 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tatyana Zalukaeva can be reached on 571-272-1115. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Melanie J Hand/
Examiner, Art Unit 3761